

CLAIMS

1. A press (10) of pressure cell type, which comprises a force-absorbing press body (12, 68) which encloses a press chamber, in which press chamber a tray (20, 60, 60a, 60b, 60c, 60d, 70, 74) is introducible, the tray comprising a tray frame which defines a space (26) for arranging a forming tool and/or a workpiece, characterised in that prestressing means (24, 72, 76), which induce a compressing prestress which acts in planes parallel to the plane of the tray, are arranged on the external surface (22) of the tray frame and that the tray frame presents a curvature along its entire circumference.

2. A press of pressure cell type as claimed in claim 1, wherein the external surface of the tray frame is entirely curved in the circumferential direction of the tray frame, while the internal surface of the tray frame, i.e. the surface that defines said space (26), presents at least one straight portion in the circumferential direction of the tray frame.

3. A press of pressure cell type as claimed in claim 1, wherein the internal surface of the tray frame, i.e. the surface that defines said space (26), is entirely curved in the circumferential direction of the tray frame, while the external surface of the tray frame presents at least one straight portion in the circumferential direction of the tray frame.

4. A press of pressure cell type as claimed in claim 1, wherein both the external surface of the tray frame and the internal surface of the tray frame, i.e. the surface that defines said space (26), are entirely curved in the circumferential direction of the tray frame.

5. A press of pressure cell type as claimed in any one of claims 1 - 4, wherein the circumference of the tray frame has a geometrical shape chosen from the group consisting of circular, elliptical and super-elliptical.

6. A press of pressure cell type as claimed in any one of claims 1 - 5, wherein said prestressing means comprises at least one prestressing element which is wound round the external surface of the tray frame.

7. A press of pressure cell type as claimed in any one of claims 1 - 6, wherein said tray frame comprises at least one plate-shaped, annular lamellar means (20, 60, 60a, 60b, 60c, 60d, 70, 74) which has a central hole, a workpiece being adapted to be machined in the space which is formed by the central hole.

8. A press of pressure cell type as claimed in any one of claims 1 - 4, wherein the tray comprises a number of concentric, plate-shaped, annular lamellar means which abut against one another, each have a central through hole and are located in planes that are parallel to the plane of the tray, a workpiece being adapted to be machined in the space which is mutually formed by the holes of the concentric lamellar means.

9. A press of pressure cell type as claimed in any one of claims 7 - 8 combined with claim 6, wherein the prestressing element is band-shaped and has essentially the same width as the thickness of a lamellar means, each lamellar means being provided with a prestressing element.

10. A press of pressure cell type as claimed in claim 8 or claim 9 combined with claim 8, wherein the lamellar means are detachable from one another.

11. A press of pressure cell type as claimed in any one of claims 7 - 10, wherein the lowest lamellar means (20, 60, 60b, 60d) is detachably arranged on a bottom plate (16, 64) in the press chamber.

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12. A press of pressure cell type as claimed in any one of claims 7 - 11, wherein a diaphragm support (18, 62) for holding a diaphragm (28) is arranged above and, when pressing the workpiece, in abutment against the up-
10 permost lamellar means (20, 60, 60a) in such a manner that the diaphragm together with a press plate (14, 66) which is arranged in the upper portion of the press chamber forms a pressure cell, the diaphragm in connection
15 with the supply of pressure medium to the pressure cell being adapted to exert a forming pressure on the workpiece arranged below.

13. A press of pressure cell type as claimed in claim 12, which is designed with such dimensions that at
20 least the diaphragm support, and optionally one or more lamellar means, is liftable with the purpose of accessing the underlying lamellar means inside the press chamber, one or more of said underlying lamellar means being removable from the press chamber while the diaphragm support
25 and any remaining lamellar means are left inside the press chamber.

14. A press of pressure cell type as claimed in claim 11, wherein the remaining lamellar means are removable
30 from the press chamber when the press chamber is free from said underlying lamellar means.

15. A press of pressure cell type as claimed in any one of the preceding claims, wherein the tray is made of
35 hot-rolled steel plate.

16. A tray (20, 60, 60a, 60b, 60c, 60d, 70, 74) for use in a press of pressure cell type (10), the tray comprising a tray frame which defines a space (26) with the purpose of arranging a forming tool and/or a workpiece, characterised in that prestressing means (24, 72, 76), which induce a compressing prestress which acts in planes parallel to the plane of the tray, are arranged on the external surface (22) of the tray frame and that the tray frame presents a curvature along its entire circumference.

17. A tray as claimed in claim 16, wherein the external surface of the tray frame is entirely curved in the circumferential direction of the tray frame, while the internal surface of the tray frame, i.e. the surface that defines said space (26), presents at least one straight portion in the circumferential direction of the tray frame.

18. A tray as claimed in claim 16, wherein the internal surface of the tray frame, i.e. the surface that defines said space (26), is entirely curved in the circumferential direction of the tray frame, while the external surface of the tray frame presents at least one straight portion in the circumferential direction of the tray frame.

19. A tray as claimed in claim 16, wherein both the external surface of the tray frame and the internal surface of the tray frame, i.e. the surface that defines said space (26), are entirely curved in the circumferential direction of the tray frame.

20. A tray as claimed in any one of claims 16 - 19, wherein the circumference of the tray frame has a geometrical shape chosen from the group consisting of circular, elliptical and super-elliptical.

21. A tray as claimed in any one of claims 16 - 20,
wherein said prestressing means comprises at least one
prestressing element which is wound round the external
5 surface of the tray frame.

22. A tray as claimed in any one of claims 16 - 21,
wherein said tray frame comprises at least one plate-
shaped, annular lamellar means (20, 60, 60a, 60b, 60c,
10 60d, 70, 74) which has a central hole, a workpiece being
adapted to be machined in the space which is formed by
the central hole.

23. A tray as claimed in any one of claims 16 - 22,
15 which comprises a number of concentric, plate-shaped, an-
nular lamellar means which abut against one another, each
have a central through hole and are located in planes
that are parallel to the plane of the tray, a workpiece
being adapted to be machined in the space which is mutu-
20 ally formed by the holes of the concentric lamellar
means.

24. A tray as claimed in any one of claims 22 - 23
combined with claim 21, the prestressing element being
25 band-shaped and having essentially the same width as the
thickness of a lamellar means, each lamellar means being
provided with a prestressing element.

25. A tray as claimed in claim 23, wherein two la-
30 mellar means which abut against one another are formed in
such a manner that a workpiece, such as a metal sheet,
which extends transversely to said space, is kept in po-
sition when these two lamellar means have been joined.

35 26. A tray as claimed in any one of claims 16 - 25,
wherein the tray is made of hot-rolled steel plate.

27. A method for manufacturing a tray (20, 60, 60a, 60b, 60c, 60d, 70, 74) for use in a press (10) of pressure cell type, comprising the steps of

forming the tray of steel plate, the tray comprising
5 a tray frame, wherein the tray frame is formed such that it presents a curvature along its entire circumference, and

inducing a remaining compressing prestress in the tray, the prestress acting in planes parallel to the
10 plane of the tray.

28. A method as claimed in claim 27, wherein the external surface of the tray frame is formed to be entirely curved in the circumferential direction of the tray
15 frame, while the internal surface of the tray frame, i.e. the surface that defines said space (26), is formed to present at least one straight portion in the circumferential direction of the tray frame.

20 29. A method as claimed in claim 27, wherein the internal surface of the tray frame, i.e. the surface that defines said space (26), is formed to be entirely curved in the circumferential direction of the tray frame, while the external surface of the tray frame is formed to present at least one straight portion in the circumferential
25 direction of the tray frame.

30. A method as claimed in claim 27, wherein both the external surface of the tray frame and the internal
30 surface of the tray frame, i.e. the surface that defines said space (26), are formed to be entirely curved in the circumferential direction of the tray frame.

31. A method as claimed in any one of claims 27 -
35 30, wherein the circumference of the tray frame is given a geometrical shape chosen from the group consisting of circular, elliptical and super-elliptical.

32. A method as claimed in any one of claims 27 -
31, wherein the step of forming the tray comprises form-
ing plate-shaped lamellar means (20, 60, 60a, 60b, 60c,
5 60d, 70, 74) of steel plate, preferably hot-rolled steel-
plate, and providing each of them with a through hole,
and arranging each lamellar means with the plane of the
plate oriented parallel to the plane of the plate of a
concentrically abutting lamellar means, a workpiece being
10 adapted to be machined in the space which is mutually
formed by the holes of the concentric lamellar means.

33. A method as claimed in claim 32, wherein
prestressing elements (24, 72, 76) are wound round the
15 external surface (22) of the lamellar means with the pur-
pose of providing said prestressing.

34. A method as claimed in claim 33, wherein a
prestressing element is used, which is band-shaped and
20 has essentially the same width as the thickness of a la-
mellar means.

35. A method as claimed in any one of claims 32 -
34, which comprises giving the lamellar means the desired
25 shape by milling or cutting, such as water cutting,
plasma cutting, flame cutting, etc.

36. A method as claimed in any one of claims 32 -
35, which comprises making the lamellar means of steel
30 plate having a thickness of 80-200 mm, preferably 100-
150 mm, especially 100-120 mm.